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G01F 23/24

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G1H H4A5 H4B1
U1S S1713

(56) Documents Cited

GB 2277592 A GB 2263168 A
GB 2246438 A FR 002762089 A

(58) Field of Search

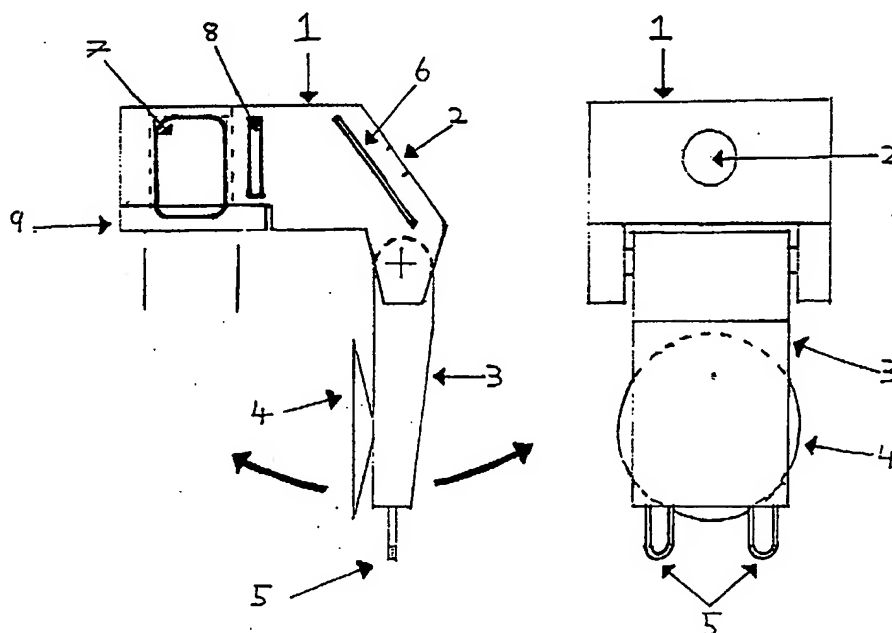
UK CL (Edition T) G1H H4AX H4A5 H4B1
INT CL⁷ G01F 23/22 23/24
Other: Online: WPI, EPODOC, JAPIO

(54) Abstract Title

A water level warning device for a domestic bath including an audible alarm

(57) The "Bath Water-level Sounder" (B-W-S) includes a plastic body 1, 3 which can be placed onto a surface of any domestic bath. The upper part 1 of the body is placed on top of the bath and contains an electrical transducer 6, a drive circuit 8 and a 9 V battery 7. The battery compartment includes a water-tight lid 9, the transducer being held in place by a water-proof flexible sealant.

The lower part 3 consists of a pivoting swing arm which is able to pivot through 180°. The swing arm has two stainless steel electrodes 5 at the bottom end thereof which complete an electric circuit when the water in the bath reaches a predetermined level which in turn activates the transducer 6 which powers an audible alarm 2. A suction cup 4 attaches the swing arm to the side of a bath.



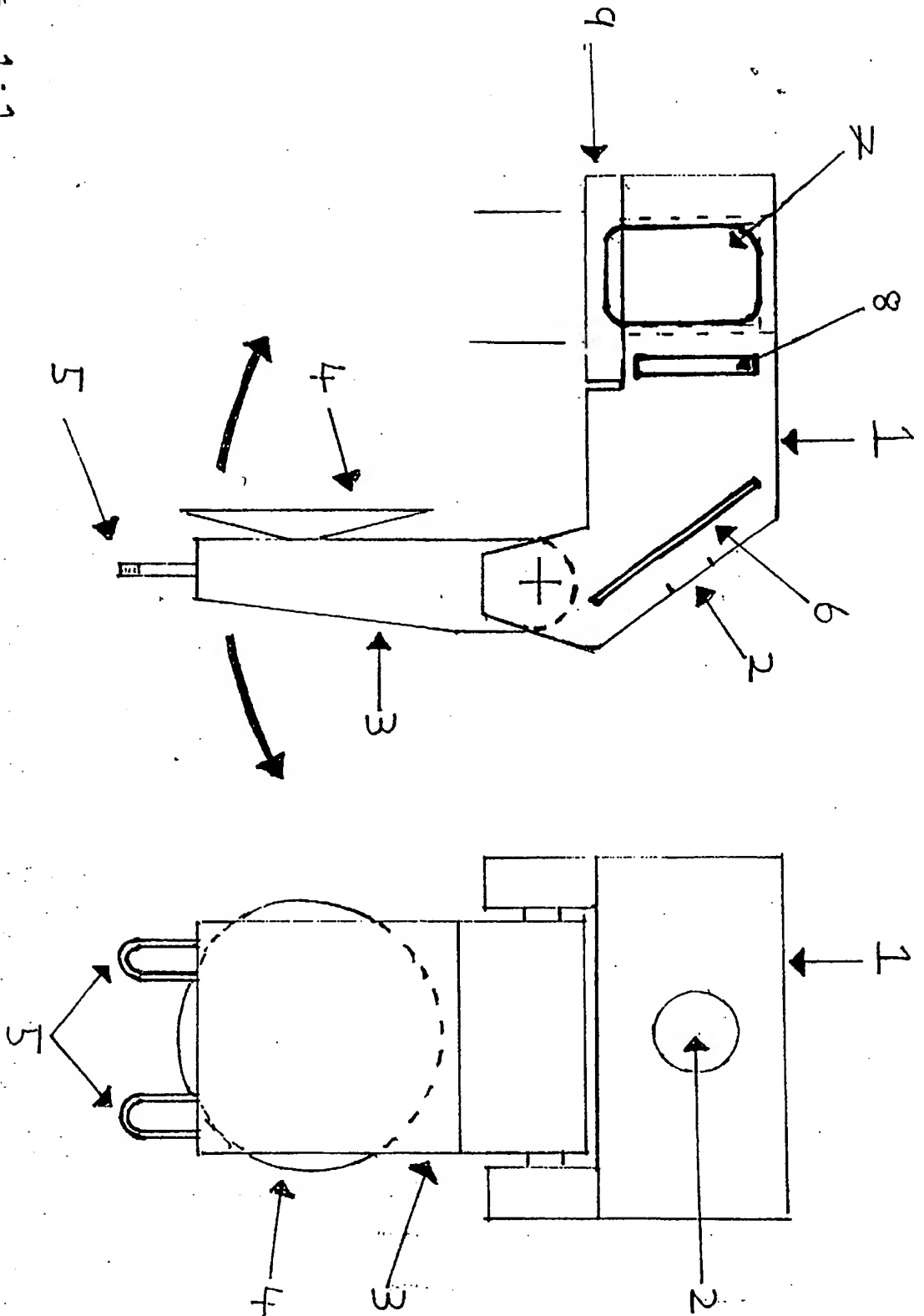
The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

At least one of these pages has been prepared from an original which was unsuitable for direct photoreproduction.

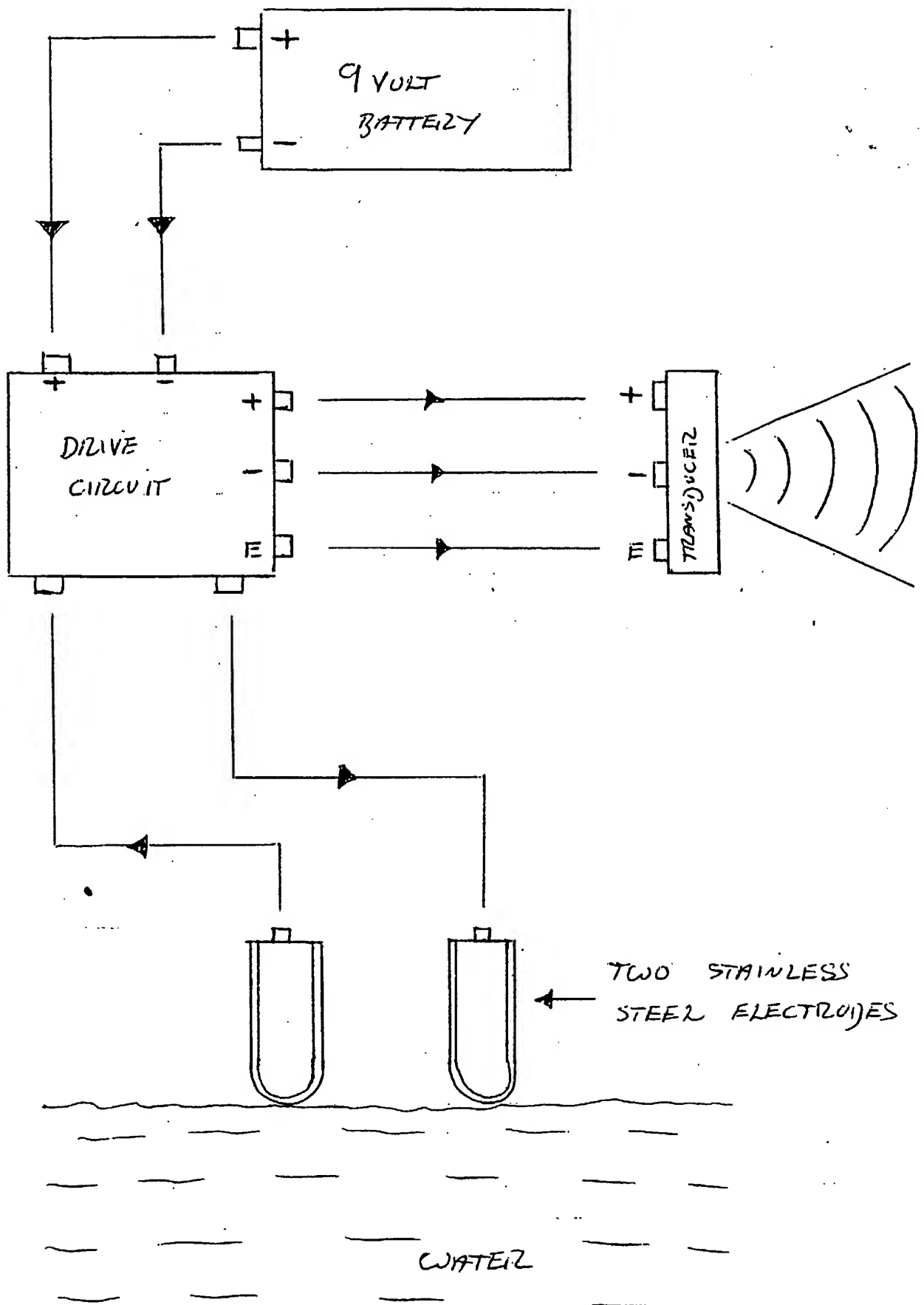
GB 2 387 229 A

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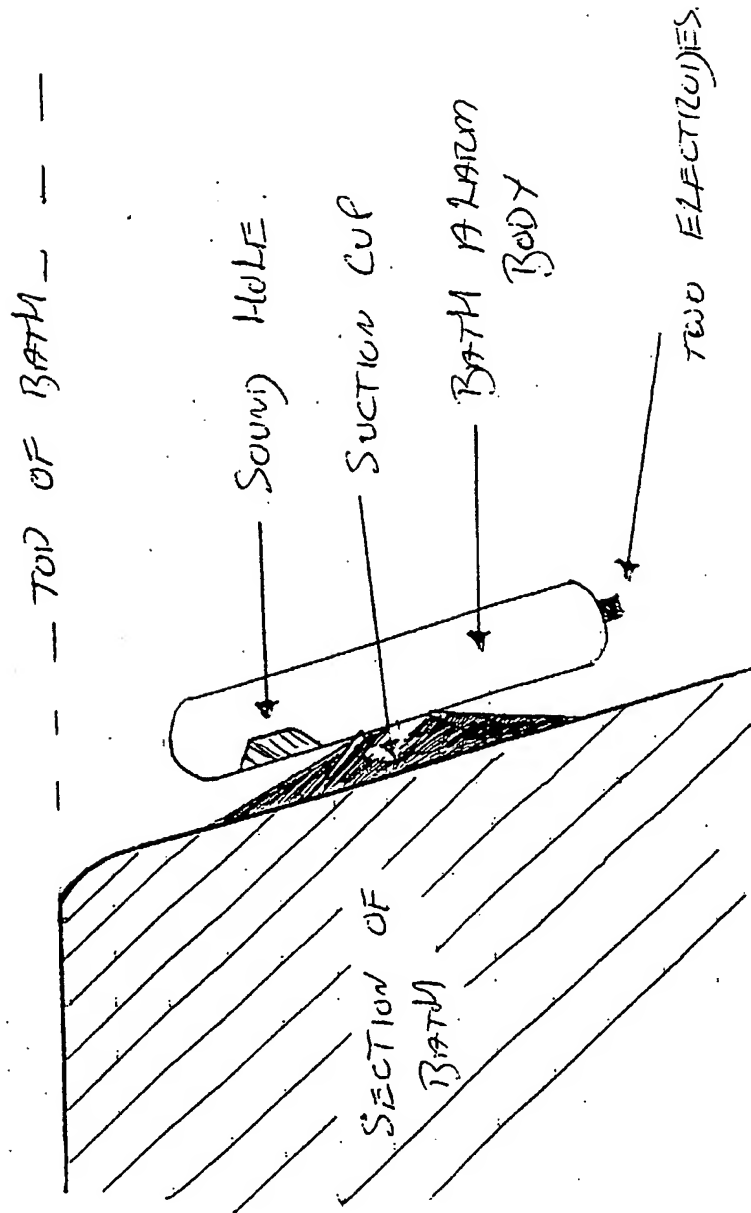
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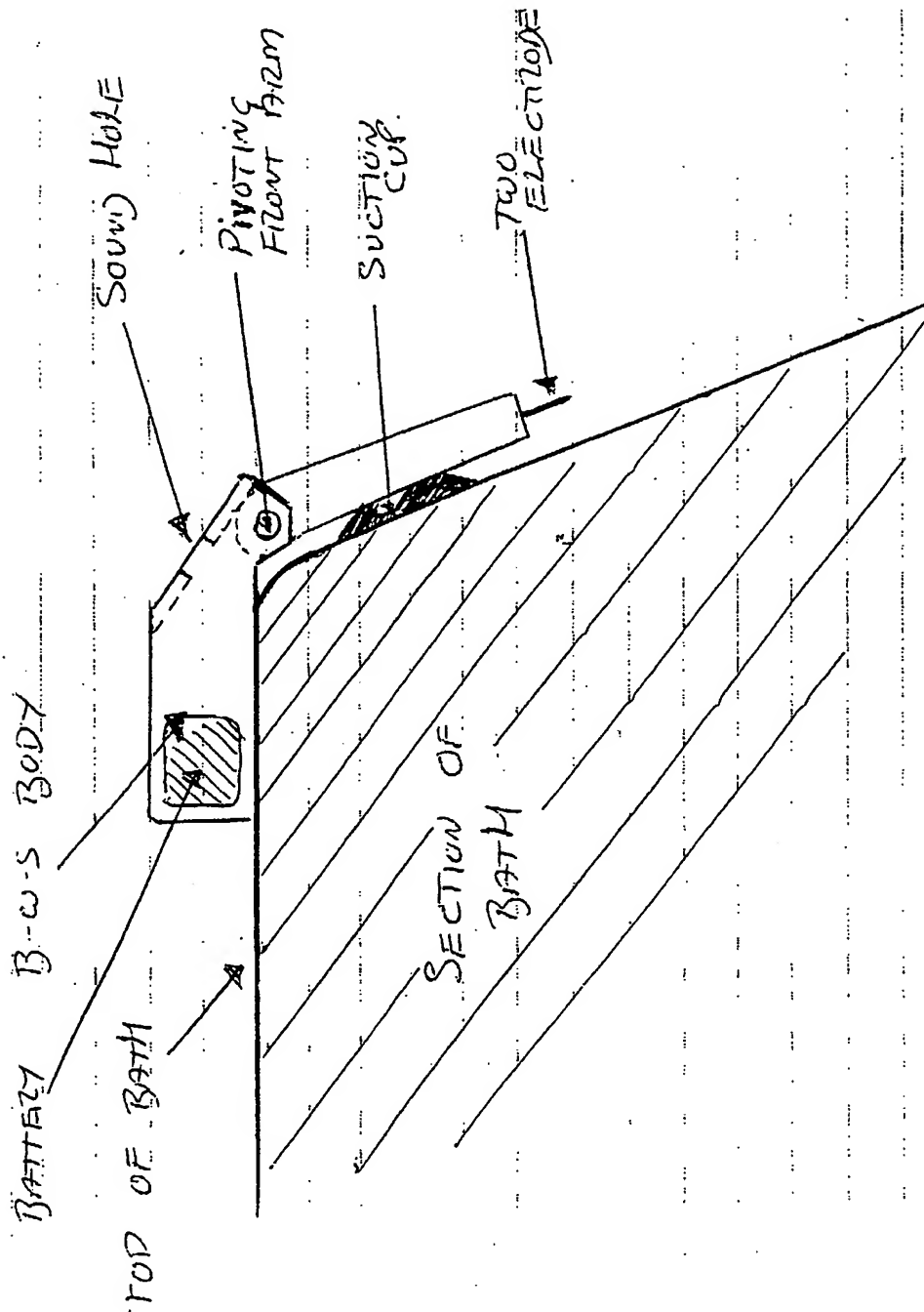
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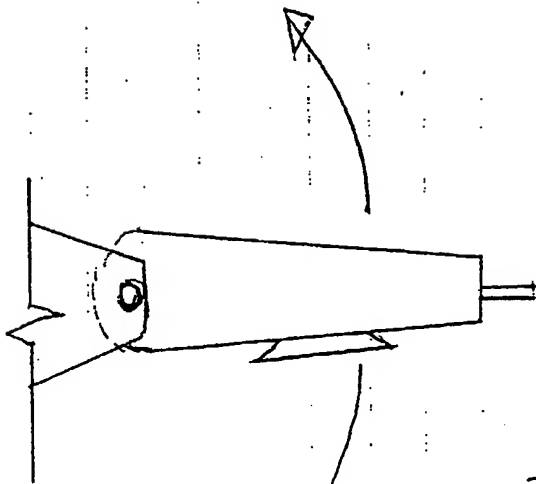
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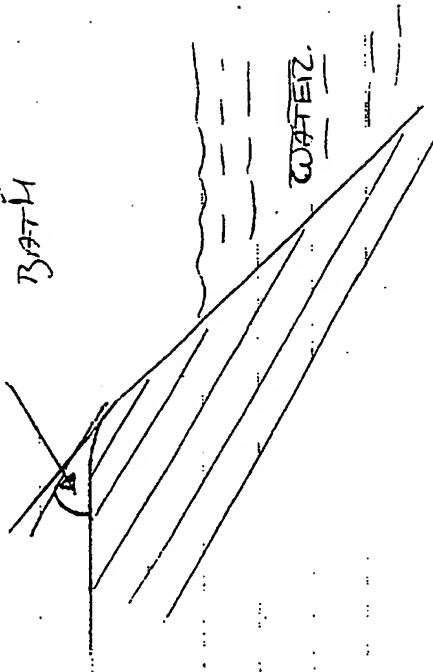
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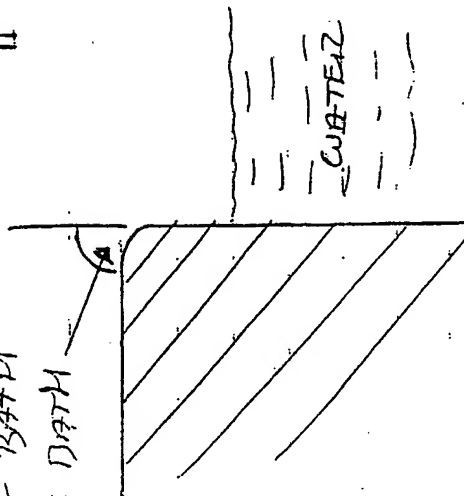
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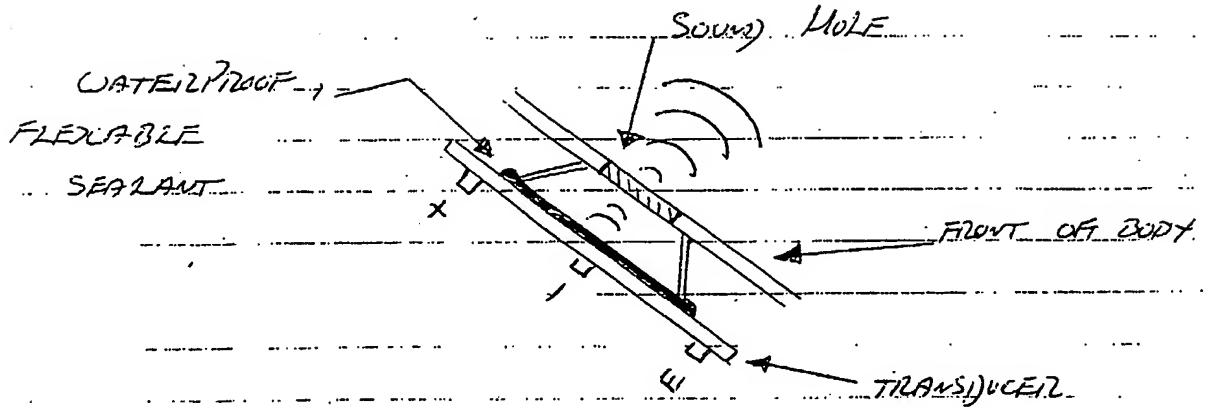
SHALLOW ANGLE OF
BATH INSIDE
BATH



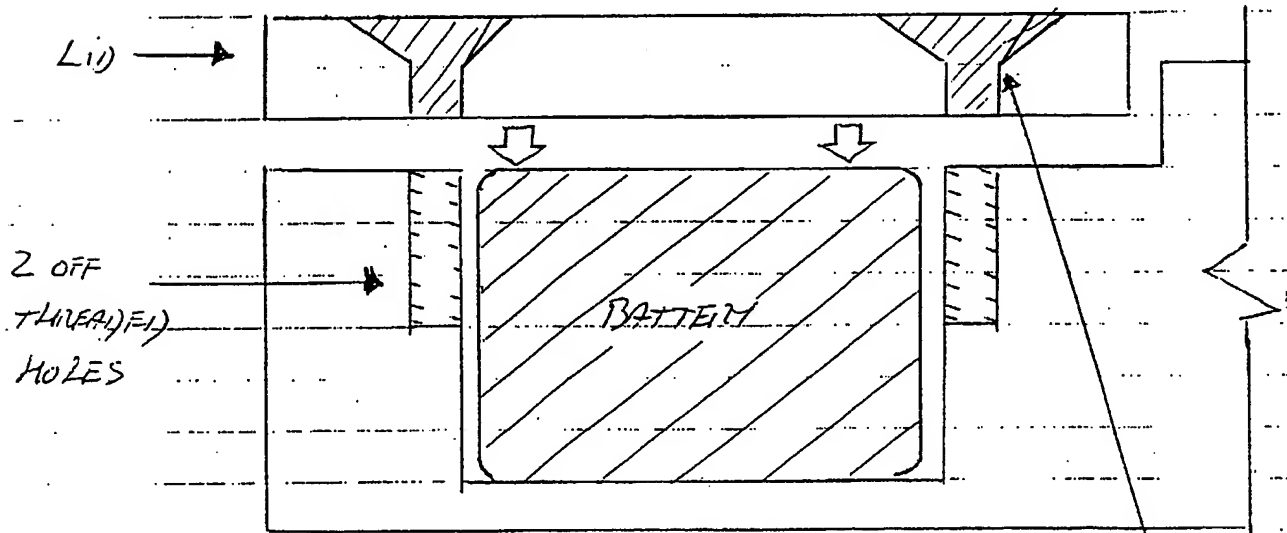
SHARP ANGLE
OF BATH
INSIDE BATH



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THE BATTERY COMPARTMENT IS ALSO WATERPROOF



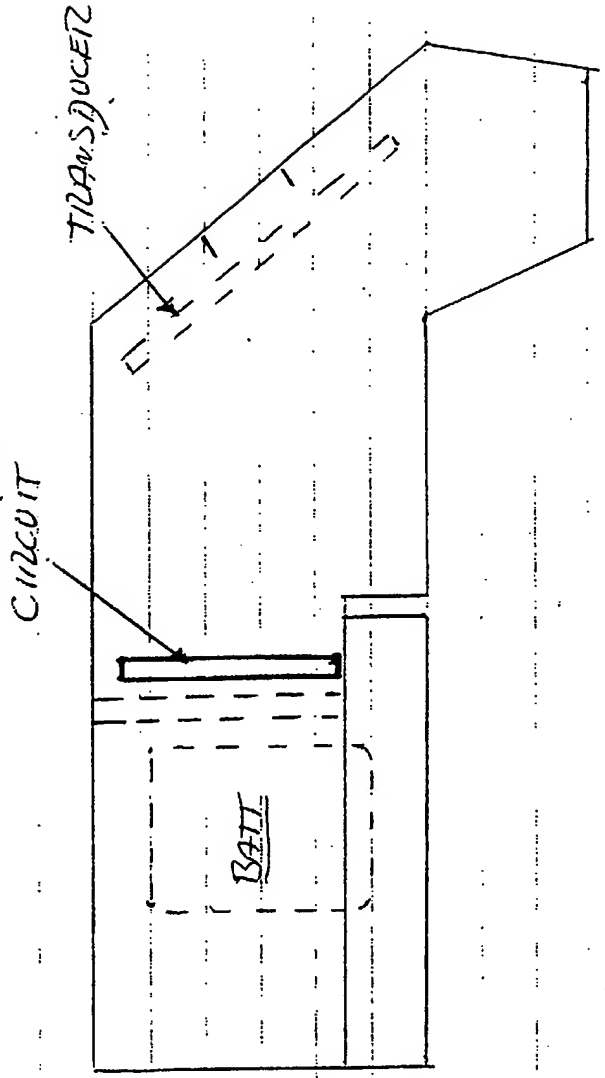
THE LID GOES DOWN TO CREATE A WATER TIGHT SEAL

BODY

2 OFF COUNTERSUNK HOLES FOR COUNTERSUNK PLASTIC OR ST/ST SCREWS

7/7

ELECTRICAL DRAWING



2387229

BATH

WATER-LEVEL

SOUNDER

Purpose of B-W-S

The purpose of my invention, the bath water-level sounder (B-W-S), was to alert people who are running a bath that the water is getting relatively close to the top of the bath, and that the sounder would alert people that it is time to turn the water off, before they flooded the bathroom or worse, and caused hundred even maybe thousands of pounds worth of damage.

Similar Designs

The only other design that I am aware of is called "Bath Alarm" This unit sits completely below the top of the bath (inside the bath) and is held inside the bath by a suction cup.

B-W-S

My invention carries out the same purpose as "Bath Alarm", yet the sound hole is above the top of the bath.

Why B-W-S Is Better Than "Bath Alarm"

As you can see from pages 3 & 4 the main advantage in B-W-S is that the sound hole is above the top of the bath. The best way for me to explain this is because with "Bath Alarm", once the water hits the electrodes and activates the sound system, you only have a short period of time before the water has covered the soundhole, thus stifling the sound, once stifled this would render the hole purpose of alerting you inactive. To me this does not really serve its purpose very well.

As a contrast B-W-S will be totally audible even if the water is actually pouring over the side of the bath.

Secondly even if the suction cup came loose on the B-W-S the device will not fall in the bath, because all of the weight is at the back of the unit (the 9V battery).

Technical Advantage

The noval advantage of the B-W-S is the swing arm at the front (incorporating the two electrodes & suction cup). This enables B-W-S to fit on to any bath and still serve its purpose.

Detailed Description

If B-W-S went into production it would be made from a thin plastic (possibly 1mm thick) to keep the weight & cost of materials down. I would imagine that the best method of production would be to injection mould the design in two halves (right side & left side), thus enabling the drive circuit & transducer & the electrical contacts to be placed in one half, and then the other half would be butted up to it, leaving a water tight seam running down the middle of the design.

The electrical system of B-W-S is powered by a 9V battery. There are two stainless steel electrodes at the bottom of the swing arm, once the water reaches these electrodes the circuit is completed, which sends a 9V signal via the drive circuit to the transducer (the sound device), which emits a loud audible high pitch noise, loud enough to be heard all over the house. Letting a person know that the water in the bath should be turned off, before any flooding occurs. The system will become active when the water reaches approximately 83mm from the top of the bath, allowing roughly 3 - 4 mins before flooding would occur.

The whole device is completely waterproof. The transducer is held to the front slopping panel by a waterproof & flexible sealant.

The device circuit is merely a printed circuit board that lets the 9V electrical current through in burst, instead of a constant flow. Securing the drive circuit inside the body will depend on the final size it is produced at, thus giving a stipulated diagram & dimensions at this point is not necessary.

Key For Diagram

- 1 - Plastic body (upper part)
- 2 - Sound hole
- 3 - Swing arm (lower part)
- 4 - Suction cup
- 5 - Stainless steel electrodes
- 6 - Electrical transducer
- 7 - 9 volt battery
- 8 - Electrical drive circuit
- 9 - Plastic lid

CLAIMS

1. A battery powered sound device mounted on the top of the bath with two electrical contacts which sit inside the bath.
2. A sound device as claimed in claim 1 which can be adjusted to fit onto any bath.
3. A sound device as claimed in claim 1 or claim 2 where the device incorporates a swing arm which can be rotated through 180 degrees and which houses the two electrical contacts.
4. A sound device as claimed in claim 3 where the adjustable swing arm incorporates a suction cup to stick to the inside of the bath.
5. A sound device as claimed in the preceding claims which houses a 9 volt battery inside a totally waterproof unit.
6. A sound device as claimed in any of the preceding claims which could be made from plastic, metal or wood, or a combination of the materials.
7. A sound device substantially as herein described and illustrated in the accompanying drawings.

Amendments to the claims have been filed as follows

- 1 - A WARNING DEVICE FOR USE IN A DOMESTIC BATH, MOUNTED ON THE TOP OF THE BATH, WHERE THE DEVICE IS CONNECTED TO A FULLY ADJUSTABLE SWING-ARM WHICH HOUSES TWO ELECTRICAL CONTACTS, WHICH ONCE IN CONTACT WITH AN ELECTRICALLY CONDUCTIVE LIQUID WILL TRANSMIT A HIGH PITCH ADJUSTABLE SOUND.
- 2 - A WARNING DEVICE AS CLAIMED IN CLAIM 1 WHERE THE SWING-ARM WILL ENABLE USE OF THE DEVICE IN ANY SHAPE OR STYLE OF DOMESTIC BATH, WHILST KEEPING THE SOUND HOLE ABOVE THE TOP OF THE DOMESTIC BATH, THUS ENABLING DETECTION OF AN ELECTRICALLY CONDUCTIVE LIQUID, EVEN IF THE DOMESTIC BATH IS OVERFLOWING, WITH NO LOSS OF ADJUSTABILITY.
- 3 - A WARNING DEVICE AS CLAIMED IN CLAIMS 1 AND 2 WHERE THE SWING-ARM CAN ROTATE THROUGH 180 DEGREES OF MOVEMENT, THUS BEING ABLE TO FOLD THE SWING-ARM UNDERNEATH THE UPPER BODY, MAKING THE WHOLE DEVICE SMALL AND EASY TO STORE.
- 4 - A WARNING DEVICE SUBSTANTIALLY AS HEREIN DESCRIBED AND ILLUSTRATED IN THE ACCOMPANYING DRAWINGS.



Application No: GB 0207559.6
Claims searched: 1-7

Examiner: Kevin Hewitt
Date of search: 17 October 2002

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.T): G1H (H4)
Int Cl (Ed.7): G01F 23/22, 23/24
Other: Online WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2277592 A (JORDAN) See whole document, and especially Fig. 2.	1,5,6
X	GB 2263168 A (LJK HOLDINGS) See in particular Figs. 1, 3(a-c) and 5(a-c).	1,2,4,5,6
X	GB 2246438 A (FISHER) See whole document, and especially Fig. 2.	1,4,5,6
X	FR 2762089 A (DEMUSSAT) See abstract and Fig. 2.	1,5,6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.